

What is Claimed is:

1. A liquid pressure transfer method for a loop-like workpiece, comprising the steps of:

supporting a transfer film on a surface of a transfer liquid while floating it thereon, said transfer film having a transfer pattern for decoration printed thereon; and

downwardly immersing the workpiece in the transfer liquid to transfer the transfer pattern to a surface of the workpiece, to thereby decorate the workpiece;

the workpiece being immersed in the transfer liquid to be apparently cut crosswise by the surface of the transfer liquid at a transfer initiating site;

the workpiece being substantially concurrently contacted on a circumference of a section thereof taken substantially in a thickness direction thereof with the transfer film at the transfer initiating site;

the workpiece being shifted at the transfer initiating site so as to be continuously immersed in the transfer liquid in a longitudinal direction of the workpiece while an immersion attitude of the workpiece is maintained;

at least one of the workpiece and transfer film being transferred during immersion of the workpiece in the transfer liquid;

whereby a portion of the transfer film which has not yet been used for transfer printing is fed so as to surround the whole circumference of the section of the workpiece taken substantially in the thickness direction thereof, to thereby ensure transfer of the transfer pattern to the surface of the workpiece.

2. A liquid pressure transfer method as defined in claim 1, wherein a relative transfer speed between the workpiece and the transfer film is set to permit an immersion rate of the workpiece and a feed rate of the transfer film to be substantially equal to each other.

3. A liquid pressure transfer method as defined in claim 1, wherein a deflection angle defined between a loop surface of the workpiece and a relative movement direction of the transfer film is set to be within a range of $\pm 90^\circ$.

4. A liquid pressure transfer method as defined in claim 2, wherein a deflection angle defined between a loop surface of the workpiece and a relative movement direction of the transfer film is set to be within a range of $\pm 90^\circ$.

5. A liquid pressure transfer method as defined in claim 1, wherein an immersion attitude angle of a loop surface of the workpiece relative to the surface of the transfer liquid is set to be within a range of $\pm 80^\circ$ on the basis of an upright position thereof.

6. A liquid pressure transfer method as defined in claim 2, wherein an immersion attitude angle of a loop surface of the workpiece relative to the surface of the transfer liquid is set to be within a range of $\pm 80^\circ$ on the basis of an upright position thereof.

7. A liquid pressure transfer method as defined in claim 3, wherein an immersion attitude angle of a loop surface of the workpiece relative to the surface of the transfer liquid is set to be within a range of $\pm 80^\circ$ on the basis of an upright position thereof.

8. A liquid pressure transfer method as defined in claim 1, wherein the workpiece is constituted by a steering wheel material formed to have a loop-like shape and provided on a part of a circumference thereof with a transfer not-required portion;

initial immersion of the steering wheel material in the transfer liquid at the transfer initiating site being started at the transfer not-required portion;

the steering wheel being immersed in the transfer liquid as it is rotated while the immersion attitude of the steering wheel material at the transfer initiating site is permitted to be maintained during the transfer of the transfer pattern.

9. A liquid pressure transfer method as defined in claim 2, wherein the workpiece is constituted by a steering wheel material formed to have a loop-like shape and provided on a part of a circumference thereof with a transfer not-required portion;

5 initial immersion of the steering wheel material in the transfer liquid at the transfer initiating site being started at the transfer not-required portion;

10 the steering wheel being immersed in the transfer liquid as it is rotated while the immersion attitude of the steering wheel material at the transfer initiating site is permitted to be maintained during the transfer of the transfer pattern.

15 10. A liquid pressure transfer method as defined in claims 3, wherein the workpiece is constituted by a steering wheel material formed to have a loop-like shape and provided on a part of a circumference thereof with a transfer not-required portion;

20 initial immersion of the steering wheel material in the transfer liquid at the transfer initiating site being started at the transfer not-required portion;

the steering wheel being immersed in the transfer liquid as it is rotated while the immersion attitude of the steering wheel material at the transfer initiating site is permitted to be maintained during the transfer of the transfer pattern.

25 11. A liquid pressure transfer method as defined in claim 5, wherein the workpiece is constituted by a steering wheel material formed to have a loop-like shape and provided on a part of a circumference thereof with a transfer not-required portion;

30 initial immersion of the steering wheel material in the transfer liquid at the transfer initiating site being started at the transfer not-required portion;

the steering wheel being immersed in the transfer liquid as it is rotated while the immersion attitude of the steering wheel material at the transfer initiating site is permitted to be maintained during the transfer of the transfer pattern.

12. A liquid pressure transfer method as defined in claim 1, wherein the workpiece is constituted by a steering wheel material;

immersion of the steering wheel material progressing while a site is defined at which the steering wheel material is immersed in the transfer liquid on an upstream side in a transfer direction relative to the transfer film as the transfer initiating site, so that the transfer pattern has a joint line formed on a rear surface of the steering wheel material which is substantially invisible from a driver's seat when the steering wheel is mounted on a vehicle.

13. A liquid pressure transfer method as defined in claim 2, wherein the workpiece is constituted by a steering wheel material;

immersion of the steering wheel material progressing while a site is defined at which the steering wheel material is immersed in the transfer liquid on an upstream side in a transfer direction relative to the transfer film as the transfer initiating site, so that the transfer pattern has a joint line formed on a rear surface of the steering wheel material which is substantially invisible from a driver's seat when the steering wheel is mounted on a vehicle.

14. A liquid pressure transfer method as defined in claim 3, wherein the workpiece is constituted by a steering wheel material;

immersion of the steering wheel material progressing while a site is defined at which the steering wheel material is immersed in the transfer liquid on an upstream side in a transfer direction relative to the transfer film as the transfer initiating site, so that the transfer pattern has a joint line formed on a rear surface of the steering wheel material which is substantially invisible from a driver's seat when the steering wheel is mounted on a vehicle.

15. A liquid pressure transfer method as defined in

claim 5, wherein the workpiece is constituted by a steering wheel material;

immersion of the steering wheel material progressing while a site is defined at which the steering wheel material is immersed in the transfer liquid on an upstream side in a transfer direction relative to the transfer film as the transfer initiating site, so that the transfer pattern has a joint line formed on a rear surface of the steering wheel material which is substantially invisible from a driver's seat when the steering wheel is mounted on a vehicle.

16. A liquid pressure transfer method as defined in claim 8, wherein immersion of the steering wheel material progresses while a site is defined at which the steering wheel material is immersed in the transfer liquid on an upstream side in a transfer direction relative to the transfer film as the transfer initiating site, so that the transfer pattern has a joint line formed on a rear surface of the steering wheel material which is substantially invisible from a driver's seat when the steering wheel is mounted on a vehicle.

17. A decorated product having a decorative pattern applied thereto by subjecting a workpiece of a loop-like shape to liquid pressure transfer printing, wherein the workpiece is downwardly immersed in a transfer liquid which supports a transfer film having a transfer pattern for decoration printed thereon on a surface thereof while floating it thereon, so that the transfer pattern is applied to the workpiece; wherein

the workpiece is surrounded on a circumference of a section thereof taken substantially in a thickness direction thereof by the transfer film at a transfer initiating site; and

the transfer film is continuously drawn into the transfer liquid in a longitudinal direction of the workpiece at the transfer initiating site;

whereby the workpiece is substantially kept from distorting the transfer pattern in the longitudinal direction of

the workpiece, resulting in transfer of the transfer pattern to the workpiece being carried out according to a method as defined in claim 1.

5 18. A decorated product having a decorative pattern applied thereto by subjecting a workpiece of a loop-like shape to liquid pressure transfer printing, wherein the workpiece is downwardly immersed in a transfer liquid which supports a transfer film having a transfer pattern for decoration printed thereon on a surface thereof while floating it thereon, so that
10 the transfer pattern is applied to the workpiece; wherein

the workpiece is surrounded on a circumference of a section thereof taken substantially in a thickness direction thereof by the transfer film at a transfer initiating site; and

15 the transfer film is continuously drawn into the transfer liquid in a longitudinal direction of the workpiece at the transfer initiating site;

whereby the workpiece is substantially kept from
distorting the transfer pattern in the longitudinal direction of the workpiece, resulting in transfer of the transfer pattern to
20 the workpiece being carried out according to a method as defined in claim 2.

25 19. A decorated product having a decorative pattern applied thereto by subjecting a workpiece of a loop-like shape to liquid pressure transfer printing, wherein the workpiece is downwardly immersed in a transfer liquid which supports a transfer film having a transfer pattern for decoration printed thereon on a surface thereof while floating it thereon, so that
the transfer pattern is applied to the workpiece; wherein

30 the workpiece is surrounded on a circumference of a section thereof taken substantially in a thickness direction thereof by the transfer film at a transfer initiating site; and

the transfer film is continuously drawn into the transfer liquid in a longitudinal direction of the workpiece at the transfer initiating site;

whereby the workpiece is substantially kept from
distorting the transfer pattern in the longitudinal direction of
the workpiece, resulting in transfer of the transfer pattern to
the workpiece being carried out according to a method as defined
in claim 3.

(20. A decorated product having a decorative pattern
applied thereto by subjecting a workpiece of a loop-like shape to
liquid pressure transfer printing, wherein the workpiece is
downwardly immersed in a transfer liquid which supports a
transfer film having a transfer pattern for decoration printed
thereon on a surface thereof while floating it thereon, so that
the transfer pattern is applied to the workpiece; wherein

the workpiece is surrounded on a circumference of a
section thereof taken substantially in a thickness direction
thereof by the transfer film at a transfer initiating site; and

the transfer film is continuously drawn into the transfer
liquid in a longitudinal direction of the workpiece at the
transfer initiating site;

whereby the workpiece is substantially kept from
distorting the transfer pattern in the longitudinal direction of
the workpiece, resulting in transfer of the transfer pattern to
the workpiece being carried out according to a method as defined
in claim 5.

(21. A decorated product having a decorative pattern
applied thereto by subjecting a workpiece of a loop-like shape to
liquid pressure transfer printing, wherein the workpiece is
downwardly immersed in a transfer liquid which supports a
transfer film having a transfer pattern for decoration printed
thereon on a surface thereof while floating it thereon, so that
the transfer pattern is applied to the workpiece; wherein

the workpiece is surrounded on a circumference of a
section thereof taken substantially in a thickness direction
thereof by the transfer film at a transfer initiating site; and

the transfer film is continuously drawn into the transfer

liquid in a longitudinal direction of the workpiece at the transfer initiating site;

whereby the workpiece is substantially kept from distorting the transfer pattern in the longitudinal direction of the workpiece, resulting in transfer of the transfer pattern to the workpiece being carried out according to a method as defined in claim 8.

22. A decorated product having a decorative pattern applied thereto by subjecting a workpiece of a loop-like shape to liquid pressure transfer printing, wherein the workpiece is downwardly immersed in a transfer liquid which supports a transfer film having a transfer pattern for decoration printed thereon on a surface thereof while floating it thereon, so that the transfer pattern is applied to the workpiece; wherein

the workpiece is surrounded on a circumference of a section thereof taken substantially in a thickness direction thereof by the transfer film at a transfer initiating site; and

the transfer film is continuously drawn into the transfer liquid in a longitudinal direction of the workpiece at the transfer initiating site;

whereby the workpiece is substantially kept from distorting the transfer pattern in the longitudinal direction of the workpiece, resulting in transfer of the transfer pattern to the workpiece being carried out according to a method as defined in claim 12.

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